Arizona Department of Education Data Governance Review

Synopsis and Recommendations

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Executive Summary

The Arizona Department of Education (ADE) collects a large amount of data from local education agencies (LEAs) through many different avenues and is responsible for producing many state and federally mandated reports, yet it does not have a centralized, coordinated data governance program to ensure high data quality and appropriate use and application of the data. In addition, ADE currently has many large-scale technology initiatives underway that will significantly impact the data that is collected from LEAs as well as how ADE stores, manages and uses student, teacher and school data throughout the state. The current administration at ADE, both senior leadership and the Chief Information Officer, is committed to improving all aspects of the overall data system in order to ensure reliable, accurate, timely and complete data is available to internal and external stakeholders, including educators and policymakers.

The current leadership knows that new and existing technology initiatives are at risk without institutionalizing an enterprise-wide data governance program at ADE. ADE engaged DataSmith Solutions to review its existing data governance structure, identify and categorize data governance issues, and make recommendations about effective data governance processes and governing bodies.

The overall purpose of the data governance review is to:
1. Evaluate and validate data governance and master data management documents that have been drafted by ADE Enterprise Architects (EAs)
2. Identify data governance issues related to the overall ADE data system
3. Make specific recommendations for data governance processes, staffing and oversight bodies necessary to implement an enterprise-wide data governance program

Findings

ADE currently has no formal data governance program or committee structure beyond a data stewards committee that discusses federal reporting requirements, yet there are many large-scale data system initiatives underway. In addition to existing statewide data collections, particularly the Student Accountability Information System (SAIS), these major initiatives are taxing the capacity of ADE staff and contractors. At the same time, many business units at ADE manage their own data collections in order to meet state and federal reporting requirements outside of the SAIS system. The consequence of so many independently operated data collections is that ADE collects over 50,000 data elements from districts, even though many of them are duplicates resulting in the expenditure of much more time and money on data systems by ADE and districts than should be necessary, especially in times of fiscal austerity. The absence of a coordinated, collaborative and centralized data governance program is costing ADE much in terms of maintaining high data quality and accountability. Without a strong data governance program that engages business units from across ADE, the effectiveness of both existing and new data initiatives may be compromised.

Recommendations

1. **Designate a Chief Data Officer or Data Governance Director.** ADE should appoint a chief data officer (CDO) who has the authority and responsibility to coordinate *all* data and information issues across the agency for all elements collected, such as metadata management, collection, access, reporting and use. The CDO would work on behalf of executive leadership, report to the Chief

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Operating Officer, and chair the data governance board and data stewards committee to ensure timely and clear communication between technology and the data stewards/owners.

2. **Implement a formal data governance committee structure.** The recommended data governance committee structure would consist of a coordinated and hierarchical committee structure of three permanent data governance committees, comprised of ADE staff, to oversee data governance of both SAIS and non-SAIS collections. The three committees include the Executive Policy Council, comprised of senior leadership, the Data Governance Board, comprised of data owners at the director position, and the Data Stewards Committee, who oversee data definition, standards, collection requirements and appropriate usage.

3. **Establish task forces to address specific data collection and reporting processes**. In addition to management of SAIS elements and collections, ADE needs to engage in governance of the many data collection and reporting processes associated with integrating multiple SLDS components with current data collections and reporting tools.

4. **Create and publish a collections calendar for all ADE data collections**. ADE needs to develop a detailed calendar for both SAIS and non-SAIS collections for greater transparency with internal and external stakeholders.

5. **Document and establish an approval process for non-SAIS collections**. ADE should document and establish an approval process for all non-SAIS collections in as much detail as it does for SAIS collections and publish this documentation on its website.

6. **Review and update SAIS data standards and collection information**. ADE should perform periodic review on a regularly scheduled basis of all metadata for SAIS data elements.

7. **Maintain engagement of district representatives and other external stakeholders**. Frequent and ongoing engagement of district and school representatives, along with other key external stakeholders in an advisory capacity is essential for all data standards, collection, and reporting processes.

8. **Establish a strong enterprise-wide data culture at ADE**. A strong data culture is established and maintained when everyone, top to bottom of the organization chart, understands and embraces that ADE is committed to a centralized, coordinated process that ensures the collection, availability, integrity, security and usage of high quality, timely and complete data at all times.

9. **Hire a skilled trainer to develop data-related training for internal and external stakeholders**. ADE may consider engaging skilled trainers or a company that specializes in effectively communicating complex IT material to ensure that engaging, accurate, easily accessible materials about the data system (including submission, correction, access and usage) are made available to internal and external stakeholders.

10. **Establish a formal process for responding to data and information requests**. ADE needs to establish a process for receiving, tracking and responding to all data requests, and it needs to make that process clear to internal and external stakeholders.

ADE Data Governance
Status, Issues, Recommendations

Presenting Issues

The Arizona Department of Education (ADE) collects a large amount of data from local education agencies (LEAs) through many different avenues and is responsible for producing many state and federally mandated reports, yet it does not have a centralized, coordinated data governance program to ensure high data quality and appropriate use and application of the data. In addition, ADE currently has many large-scale technology initiatives underway that will significantly impact the data that is collected from LEAs, as well as how ADE stores, manages and uses student, teacher and school data throughout the state. The current administration at ADE, both senior leadership and the Chief Information Officer, is committed to improving all aspects of the overall data system in order to ensure reliable, accurate, timely and complete data is available to internal and external stakeholders, including educators and policymakers.

Historically, ADE experienced poor communication, coordination and collaboration between the Information Technology (IT) division and business units (e.g., federal program areas, state finance, research and evaluation). As a result, in order to meet state, federal and local demands for information and annual accountability reports without effective collaboration from IT, business units were often compelled to develop their own data collection and reporting tools. The consequence of having different divisions maintain their own data collections is that ADE now collects over 50,000 data elements from LEAs, many of which are redundant.

This lack of collaboration and partnership between divisions within ADE has created an undue burden on district and school staff, a lack of trust in ADE data reports with internal and external stakeholders, and ineffective use of financial and staff resources at a time when state budgets are shrinking. The lack of standard decision-making processes, data management, and documentation and communication practices undermines the chief purposes for collecting and reporting education data: allocation of financial resources to schools and district, management of an accountability system and compliance with state and federal mandates.

The current leadership knows that new and existing technology initiatives are at risk without institutionalizing an enterprise-wide data governance program at ADE. ADE engaged DataSmith Solutions to review its existing data governance structure, identify and categorize data governance issues, and make recommendations about effective data governance processes and governing bodies.

The overall purpose of the data governance review is to:
1. Evaluate and validate data governance and master data management documents that have been drafted by ADE Enterprise Architects (EAs)
2. Identify data governance issues related to the overall ADE data system
3. Make specific recommendations for data governance processes, staffing and oversight bodies necessary to implement an enterprise-wide data governance program

Initial Observations

Initial conversations with key stakeholders, both internal and external to ADE, revealed very consistent responses about the data culture at ADE:

- The current IT leadership, specifically Mark Masterson and his staff, are focused on collaboration, coordination and communication, and their actions have backed up their words with the result being that LEAs and ADE business units have noticed a significant improvement in these areas. All stakeholders indicated that they desire a more coordinated, collaborative data culture, are frustrated at the inefficiencies and poor data quality from the current data silos, and are willing to engage in an enterprise-wide data governance program.
- There are many large-scale data system initiatives underway that are taxing the capacity of ADE staff and contractors, especially when ADE must maintain existing data collections while implementing new systems. Without a strong data governance program that engages business units from across ADE, the effectiveness of these new initiatives may be compromised.
- The ADE data system has many users with pressing information needs, and the prioritization of projects and deliverables must take into account all of these users. At times it may be necessary to identify quick wins in terms of providing data to different stakeholders. For example, while it is very important to build dashboards and reports for teachers and principals, ADE might need to develop dashboards and reports for state policymakers (e.g., legislature, Governor, State Board of Education, P-20 partners) in order to keep them engaged and maintain political and financial support.

Current Status

Current Governance Committee Structure

As of late 2012, ADE has one data governance committee. The Data Stewards committee meets monthly and consists of data owners from many business units. It is chaired by Jeff Stowe, ED*Facts* Coordinator, and as a consequence it was described by many stakeholders as an EDFacts status meeting. Attendance does not appear to be consistent across business units, and it was deemed ineffective by many stakeholders.

SAIS and Non-SAIS Collections

SAIS is the Student Accountability Information System and is the primary student data collection system at ADE. As mentioned previously, for a variety of reasons, ADE business units did not feel that SAIS fully supported their information needs and many built and implemented their own data collections. They might use SAIS data to supplement their own data collections, but it is unclear if there is consistent use of SAIS as the primary data source for certain data elements. In addition to program specific data collections, there are occasions when SAIS cannot support particular reporting requirements, such as one-time surveys, evaluation data for grant requirements, state or formula funding requirements. Often these ancillary data collections require aggregate data (i.e., summary statistics for a school or program), as opposed to data collected for individual students through SAIS. It is unclear how many non-SAIS collections there are at ADE. Unclear information about the number of non-SAIS collections, the elements contained in them, the focus of those collections and the reason for them is problematic from a governance perspective.

Organizational Structure and Data Use/Reporting

Data collection, storage and maintenance are critical to an effective data system, but the ultimate purpose of collecting the data is to use it … by a wide variety of stakeholders in a wide variety of formats. A critical issue faced by all state education agencies (SEAs) is defining the process of responding to standard and ad hoc data requests and producing reports or datasets to satisfy those requests.

Stakeholders from business units raised the issue of having business analysts or programmers in IT respond to data requests or create summary statistics for reports. Business unit staff indicated that they review subsequent analyses or reports and often find errors because IT staff do not pull the correct data or apply it correctly. Subsequently, the business units either rerun the analyses or go back and forth with IT staff to explain how to calculate accurate statistics.

This issue raises an important issue faced by most SEAs: in general, IT staff are expert at building technology solutions and writing business requirements, but technologists and business analysts are not generally trained to be data analysts. Data analysts and researchers, such as those in the Research & Evaluation office and in some program offices, are trained to understand the nuances of using one data element over another because of how each is defined or what the code values mean and to understand how to appropriately aggregate data and apply it to a policy question. Strong data governance includes clarifying expectations about roles and responsibilities regarding data access, use and reporting; ensuring appropriate skill sets of staff, and establishing a detailed process for receiving, reviewing and responding to a wide variety of data request. The differences between skill sets in different business units must be acknowledged and used accordingly.

Areas of Review

Data governance
Data governance addresses the handling of data in an organization. Specifically, data governance refers to decision-making and authority addressing data-related matters, such as the availability, usability, integrity, and security of the data employed in an enterprise. A data governance program consists of the individuals and processes that address data quality, data management, data policies, business process management, and risk management surrounding the handling of data in an organization and the governance bodies that have responsibility for establishing and enforcing policies and guidance involving data.

Data Elements. It is estimated that ADE collects over 50,000 data elements through its many collection mechanisms, including SAIS and various program-specific collections. Many of these elements are redundant and collected multiple times by different programs because ADE does not have a centralized, organized process for master data management – a process that includes comprehensive documentation of all data elements and data collections, guidelines about utilizing existing elements and collections before implementing new collections, and procedures for sharing data from centralized collections with stakeholders throughout the organization. Master data management instills an enterprise wide culture around data standards, collections and usage.

A strong data governance program and master data management process in ADE would infuse a culture of cohesive, coordinated data ownership across internal stakeholders. All data elements that are collected by ADE should undergo significant review by a cross-sector governance committee before being added to any data collection vehicle. If at all possible, ADE should attempt to comply with new reporting requirements or data requests by using elements already collected, even if existing definitions

and/or code sets need to be adapted to meet multiple reporting requirements; however, that is not always possible. When new elements must be collected, ADE data governance committees should identify the most appropriate mechanism for collecting that data, whether through SAIS, a survey or by adding a non-SAIS collection instrument.

Issues to be considered when determining the appropriate collection mechanism include the frequency of collection, when the data must be collected and reported, the unit of measurement (e.g. , student, school, district), how the element must be defined and coded, and how it will be used.

Currently, ADE does not have a comprehensive or strategic process for reviewing, consolidating, coordinating and approving the addition/deletion/adaptation of data elements and data collections from an enterprise-wide perspective. The absence of a centralized coordinated governance program has increased reporting burdens on districts, increased fiscal and resource expenditures unnecessarily, and yielded conflicting and/or questionable information and annual reports to stakeholders.

Data Documentation. Effective data governance can make ADE more efficient by reducing costs, establishing accountability, ensuring transparency, and building standard, repeatable processes regarding data-related decisions, activities and communication. Central to accountability, transparency and building standard, repeatable processes – whether the process involves designing new collections, preparing aggregate files for federal submission, or calculating accountability ratings or reports – is clear, consistent documentation about decisions, decision makers, processes for building files, algorithms for calculating performance indicators and so on.

Detailed documentation is an essential element of strong data governance. Staff turnover, changes to federal and state mandates, policy changes that affect data collections and usage are all examples of why standard and complete documentation is essential year-to-year to ensure that ADE can rely on consistent high quality data to replicate and accurately adapt reports and analyses over time.

Currently, there appear to be little to no standardized documentation processes for ADE data collections, access and usage even within specific program areas that manage their own collections. A consistent refrain was heard from stakeholders throughout the agency that a lack of documentation results in burdensome processes each year to meet reporting requirements with consistent data. This was true with stakeholders in IT which has many new staff and contractors; they had little documentation to build on from the previous administration. The lack of documentation was also acknowledged by the EDEN/ED*Facts* Coordinator who has had responsibility for meeting federal reporting requirements since EDEN was initiated in 2003. The ED*Facts* Coordinator works with staff in federal program areas to build files to submit to EDEN, but this is affected every year by a lack of documentation in the program area and in his own processes. The lack of clear, consistent documentation about data elements, decisions and processes year-to-year is inefficient and can lead to inconsistent results and information.

Many people think that documentation is done after decisions are made and projects are completed, and as a result it is often not done. Good data governance practices include on-going documentation throughout the decision-making and product-building process, not afterwards. It is easier to make a few notes at the time of a decision, then to recreate an entire process after the fact. Good documentation processes also necessitates the development of standardized document formats that accompany decision-making processes, programming processes, and communication processes. A few simple templates can be developed at ADE that can then be adapted and utilized throughout the enterprise.

Standards/Meta Data Management. A robust data governance program includes the strong metadata management in terms of SAIS and overall statewide student longitudinal data system (SLDS) elements. Annual updates to the SAIS data standards should be published on regular cycle, and the documentation should articulate the submission procedures, annual changes, and responsibilities of local, regional and state stakeholders. SAIS documentation for FY 2012 is on the ADE website in the form of an 800+ page PDF, but the previous version on the website was for FY 2007. Annual updates and an interactive structure to expedite access to critical sections (e.g., file due dates; data definitions, formats and code values; corrections processes) should be of prime concern. There appears to be limited metadata management for SAIS and non-SAIS collections, nor is there a governing body the reviews and approves non-SAIS collections.

Decision Making/Communication. ADE has not had an effective data governance oversight body for at least the last five years. The current CIO and IT staff have begun the process of shoring up basic data governance practices in terms of stakeholder engagement and communication, including hiring enterprise architects to start documenting current data collections, data elements and data owners and to begin developing key data governance documents. Internal and external stakeholders confirmed that the communication, stakeholder engagement and decision-making processes have improved significantly in the last year and a half.

ADE acknowledges the need for an enterprise-wide governance program to help with data-related decision making, transparency and communication. Much of the documentation and processes that do exist stand to be improved and institutionalized. The current data stewards committee is limited in focus and effectiveness.

Roles and Responsibilities of ADE Staff
Given that data governance is about establishing and maintaining a set of processes and policies around enterprise-wide data, identifying the appropriate roles and responsibilities of the staff involved in data governance is critical to its effectiveness.

Currently, the ADE organization chart reflects a hierarchy based on functional areas and business units. Most areas and units have deputy assistant superintendents or directors who report to assistant superintendents. The assistant superintendents in turn report to the deputy superintendent of programs and policy or the deputy superintendent who reports to the Superintendent of Public Instruction. For the purposes of data governance discussions, the assistant superintendents, CIO and others who report to the deputy superintendent, along with the deputy superintendent and superintendent, are considered to be members of the senior leadership or executive team. Deputy assistant superintendents and program directors are considered to be data owners.

At present, there is no single data governance officer at ADE. Initial data governance activities are being administered by the CIO, but data governance is not necessarily a function of the IT division. In fact, when asked about where a data governance officer should be housed, many internal stakeholders, including some IT staff, indicated that it should be housed outside of IT since the business units and data users provide the context for when and how data should be collected and used, whereas IT is responsible for technical components of a data system.

Articulation of key roles and responsibilities around data within the organization is critical for effective data governance. As stated previously, identifying who is responsible for extracting data and calculating

key statistics in response to data requests and mandated reports is critical for ensuring accurate, consistent and reliable results and reports; as such, it is critical that staff with the proper analytical training and program area content knowledge are responsible for producing or at least validating reports before they are shared. ADE, in general, and program areas, in particular, needs to identify which data and/or business analysts should be responsible for these activities. By the same token, there is some question as to whether federal program area business units should produce these reports or whether this might be a role for the Research and Evaluation (R&E) unit.

The role of the Research and Evaluation (R&E) division is unclear to many stakeholders inside of ADE. Is it, much like IT, a service provider to other units or is it tasked with other responsibilities or both? The R&E unit would be a likely place to respond to ad hoc reports from external stakeholders (particularly the Governor and legislature) and internal stakeholders, such as the Superintendent and government relations liaison. Ideally, the R&E unit would have access to all ADE data and be able to conduct analyses and produce reports containing valid summary and trend statistics to guide policy and practice. As such, the R&E unit would be a partner to other business units and ADE leadership in meeting analytical and reporting needs. For those requests asking for datasets (whether anonymous student data or aggregate statistics), ADE could likely house a unit of business analysts or other appropriate staff to build these datasets. This type of unit could easily fall within the purview of IT and coordinate work with appropriate business units to ensure that appropriate data is included in the dataset.

The issue of managing external data requests, either requesting a dataset or a set of analyses, is a critical function to an effective enterprise-wide data governance program. Responses to these requests are a reflection of the organization and another way that outsiders assess ADE effectiveness. The timeliness, accuracy, completeness and consistency of data requests to state and local policymakers, researchers, newspapers, advocacy organizations and others can significantly impact ADE's reputation, political standing, support and potential funding. A robust data governance program will establish processes and procedures for how and to whom external data requests are submitted; who conducts the analyses and who validates the findings; how requests are approved, denied and prioritized; and how the requests and any subsequent decisions or actions are tracked and monitored.

Initial efforts towards managing and responding to data requests at ADE have begun. There is an email address to which stakeholders can submit data requests, and staff in IT and R&E have responded to some requests, but there are not clearly articulated procedures for who receives data requests, who prepares the response, who sends the response and who documents request and response. Some SEAs have a central communications officer or division for receiving requests from both policymakers and other external stakeholders (e.g., researchers, new organizations) who then distribute the request to the appropriate unit to prepare the dataset or analyses. This way the SEA has one point of contact for data requests who coordinates responses enterprise-wide and is able to reduce the opportunity for multiple requests going to multiple units resulting in conflicting or contradictory findings.

The goal of the data governance program is to establish enterprise-wide processes and procedures that ensure high quality, consistent and accurate deliverables – internally and externally – that are institutionalized and managed over time and that are not dependent on specific people. ADE personnel will constantly change over time, but good data governance processes should remain in effect as a means of meeting ADE's mission and vision. That said, the processes and procedures should adaptable to changing policies and requirements, but the principles of the governance program should be consistent over time.

Partnership with LEAs and External Stakeholders
There is currently and historically a tremendous burden on LEAs in terms of ADE data reporting requirements. The lack of consistent, timely and effective communication about these data requirements and the lack of collaboration with LEAs in the past led to very strained relationships between ADE and LEA policymakers and practitioners. The current ADE administration has made great strides in repairing those relationships both individually and through statewide organizations, such as Arizona School Computer Users' Support (ASCUS). Specifically, over the last year and a half, the ADE CIO has engaged LEA representatives and ASCUS members collectively to gather input and feedback on new major IT initiatives and ongoing IT processes.

The collaboration with and solicitation of ideas and feedback has been useful to both ADE and the LEAs. A strong data governance program will continue this collaboration and formalize the engagement of both LEA administration (e.g., superintendent and assistant superintendents) and LEA and school data and technology coordinators in the planning and design of IT initiatives, along with ongoing change management activities.

There are strong political reasons to partner with other education stakeholders (e.g., the Data Governance Commission, Governor's office, State Board of Education, and higher education) and find a way to formally engage them in the ADE governance structure, as opposed to being called to present at their meetings. Key stakeholders have turned to higher education entities to access and analyze K-12 data in the state because of timeliness and trust issues with ADE reports, so finding a way to engage those stakeholders in the ADE governance process and build the trust would be valuable. For example, their input and feedback can be used to develop quick and reliable responses to ad hoc requests and/or easily accessible data dashboards with small amounts of critical data by legislative district or statewide numbers.

Gaps between Current and Desired Governance

Data Dictionary and Meta Data Documentation
At the core of a strong data governance program is the ability for all stakeholders to know what data is collected when and in what format. Detailed documentation about each and every data collection, including lists of all data elements, data definitions, formats and code values, along with the purpose for collection the data, where it is stored and appropriate usage is fundamental for basic data management activities. Documentation and training about all available data analysis and reporting tools is essential for centralized, enterprise-wide data management. At present, ADE does not have a comprehensive centralized data dictionary or process for meta data management and documentation.

Governance Structure
There is currently no formal enterprise-wide governance structure for decision making and authority around data availability, usability, integrity and security of data at ADE. There is a data stewards committee that meets monthly, but it focuses on ED*Facts* updates, does not address key components of a data governance program, and attendance at the current data stewards committee is not mandatory and is not consistent. All of this renders the current data stewards committee relatively ineffective, perhaps even for ED*Facts* management. A robust data governance program ensures active participation from stakeholders across the organization and ongoing partnership with external stakeholders to inform

and enhance decision making, documentation, transparency and communication processes from an enterprise-wide perspective.

Governance Transparency and Communication

Even though most education stakeholders in the state will not be actively engaged in formal data governance activities, ADE should have thorough and well-documented governance processes, and such documentation should be easily accessible by all stakeholders, both internal and external. Transparency and ongoing communication about governance decisions and activities provide important ways to build trust with external stakeholders and solicit feedback and involvement from them. Frequent and publicly available updates about governance activities can also be used to keep ADE staff informed and provide a mechanism for ADE to ensure proper documentation about all of its data collections.

Effective communication practices include, but are not limited to the following : standard format for letters and memos to LEAs, what material is sent to superintendents vs. data coordinators, from whom (i.e., under whose signature), who reviews and signs off on communications, who can communicate with superintendents, a formal point of contact and chain of command by topic. Should business analysts be responsible for sending communications to superintendents? Who should review and approve these communications? Communications from ADE personnel about anything data related ultimately represent the Superintendent of Public Instruction and the Arizona Department of Education and should be written and disseminated accordingly. As such formal procedures should be developed to govern communications about the ADE data system.

Committee Participation

Much care has been taken to involve LEA representatives over the last year and a half; however, formalized and ongoing engagement of both policy and technical LEA representatives can shore up a strong governance program. In addition formalized and representative participation by internal stakeholders on data governance committees will be critical to an effective data governance program. Data governance committees can be institutionalized and effectively managed through clear succinct committee charters that outline the goals, objectives, deliverables and expectations for active engagement. Well managed and clearly focused committees can provide an effective and efficient way to build and sustain a robust data governance program. Poorly managed and unfocused committee meetings with no accountability or articulated outcomes will only add to time and resource burdens of ADE business units and staff. It will be critical to engage a strong, dynamic data governance officer and/or meeting facilitator to ensure that governance committees are productive.

Attendance and active engagement of governance committee members, both internal and external, is critical. Limited participation by governance committee members affects the effectiveness of the committee, particularly with regard to getting input from LEAs. Each advisory and governance group chaired by and consisting of LEAs should establish staggered term limits for members and the chair (staggered in that a specific percentage rotate each year, as opposed to the entire committee membership changing at the same time) to ensure wide representation of districts over time, particularly in terms of geography, size, demographics, and types of organizations (e.g., regular, charter, Bureau of Indian Education).

Recommendations

1. **Designate a Chief Data Officer**
    The current data governance structure consists of one committee of data stewards that focuses on ED*Facts* chaired by the ED*Facts* Coordinator, but no single person is designated as the single ADE data governance point of contact. No one person is responsible for coordinating, documenting and communicating data governance activities across all business units.

    ADE should designate a chief data officer (CDO) or data governance director, who would work on behalf of executive leadership and report to the deputy superintendent or chief operating officer, to ensure timely and clear communication between ADE senior leadership, business unit data owners, governance and advisory committees, and information technology. The CDO should have the authority and responsibility to coordinate *all* data issues across the agency, including data standards for all elements, metadata management, data collection via SAIS and non-SAIS collections, access, use, privacy and reporting. As presented in Resource #1, *The 10 Elements of Data Governance for Statewide Longitudinal Data Systems*, data governance involves coordination of processes, people and data/technology. ADE's current data governance structure is lacking cohesive executive leadership and coordination that a CDO would be responsible for providing.

    The CDO would be a member of the Executive Policy Council and would serve as the chair of the data governance board and data stewards committees, as described in Recommendation #2. The CDO would likely require personnel to organize and staff the governance committees, take and disseminate meeting minutes, and coordinate, document and disseminate materials about governance program activities during and between meetings.

2. **Implement a formal data governance committee structure**
    Governance of the data elements, collections, access and use within the overall data system should be managed by ADE staff, while actively seeking input and feedback from external stakeholders via advisory committees. Ultimately, the Superintendent of Public Instruction has authority over all data governance decisions and policies.

    The recommended data governance structure would consist of a coordinated and hierarchical committee structure of three permanent data governance committees (as shown in Figures 1 and 2), comprised of ADE staff, to oversee data governance of both SAIS and non-SAIS collections. Two advisory committees, comprised of LEA representatives and other key external stakeholders, should be formed to work in conjunction with the permanent committees.

    *   *The Executive Policy Council* (EPC) provides strategic direction, ensuring that data governance efforts address all relevant and mission-critical needs of the enterprise. It manages data governance as an integrated program rather than as a set of unconnected projects. The Executive Policy Council (EPC) would consist of the deputy superintendent, CDO, CIO and other members of senior leadership who report to the deputy superintendent or the deputy superintendent of programs and policy.
    *   *The Data Governance Board* (DGB) implements the policies of the Executive Policy Council. It prioritizes data governance efforts and communicates with internal stakeholders, key data users, and external stakeholders. It identifies staff (data stewards) to oversee specific areas of data). The Data Governance Board (DGB) would be responsible for data-related policies and

program-level or business unit level decisions at ADE. The CDO would chair the DGB and membership would consist of ADE program and business unit directors. The DGB charter should specify the committee mission, membership and responsibilities. External stakeholders should be engaged on an advisory committee that reviews and provides feedback on potential data policies, IT initiatives and program recommendations; however, the external advisory committee should have no governance authority.

• *The Data Stewards Committee* (DSC) implements the plans developed by the Data Governance Board, analyzes any tactical problems that arise, advises the Data Governance Board and resolves technical issues accordingly. The Data Stewards Committee (DSC) would be responsible for the governance of the technical aspects of ADE data systems, including both SAIS and non-SAIS collections. The data steward is the ADE staff person in the applicable program or business unit that collects data and has the authority and responsibility for articulating the meaning of the data element, the business rules by which it is collected and the way it will be used. (See *Kansas Data Governance Program*, Resource #2, for examples of similar committees and staff roles, and *Tennessee Role Descriptions and Responsibilities*, Resource #3) The DSC would also be chaired by the CDO. An external advisory committee of technical level staff should be formed to review and provide feedback to the DSC, but they should not have decision-making authority or responsibility. ADE could also consider combining the DSC and the external technical advisory committee for efficiency. Their recommendations would be forwarded to the DGB.

Figure 1. Recommended Permanent Standing Governance Committees
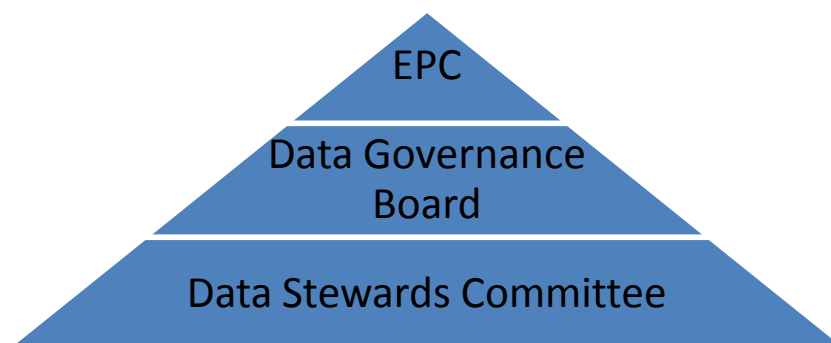
3. **Establish task forces to address specific data collection and reporting processes**
   In addition to the permanent governance committees, ADE should utilize temporary governance committees to assist with the integration of major IT initiatives, such as those occurring under the SLDS program, as presented in Figure 2. SLDS is introducing many complex features to an already robust data system. The integration of all of these components needs to be addressed in a coordinated way from the outset. Data governance involves processes, people and data/technology, not just the data elements that are collected. Data governance committees and/or task forces should be able to address the processes of both implementing new features and integrating them with the existing system.

   The committees that are designated to address SLDS integration activities should not become permanent, although some could well exist for years. Each committee, permanent or not, should have its own charter that articulates its status as permanent or temporary (including expected duration), the specific roles and responsibilities of the committee and of its members. Committee

charters, especially for committees with ADE staff membership, should also include explicit expectations about who should serve on the committee and active participation by all members, and resulting actions for inactivity. Advisory committees or task forces with external stakeholders, whether at the executive level or the functional level, should also establish charters that outline the mission, scope, responsibilities and participation expectations.

There should also be a clear and documented process for coordinating and overseeing technological implementation of business and governance processes. No changes to technology hardware, software or processes should occur without a specific request or review through the data governance coordinator and/or data governance board.

Figure 2. Recommended Data Governance Committee Structure during SLDS Implementation
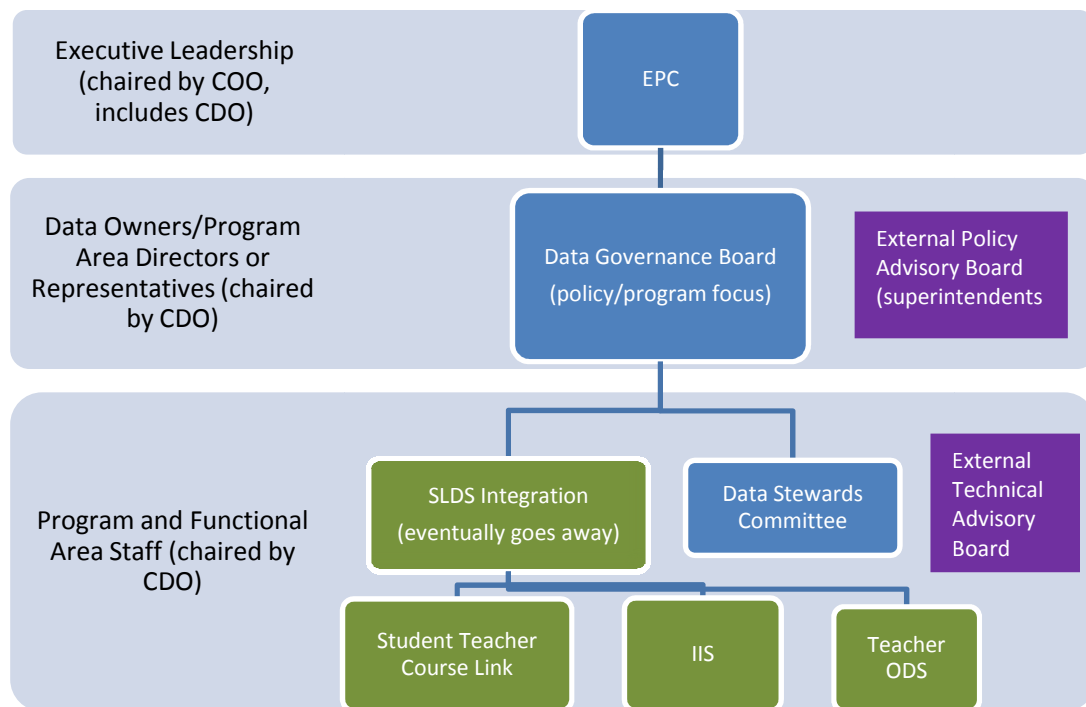
4. **Collections calendar for all ADE data collections**
   Develop and publish a detailed calendar for all ADE data collections, both SAIS and non-SAIS, which articulates due dates, responsible organization, submission mechanism, and authorizing statute or requirement. As additional Operational Data Store (ODS) specifications and requirements are developed, ADE should also thoroughly document all metadata for elements items included in those ODSs, especially those that will be shared with the SAIS system. A thorough data collections calendar, that includes information on when data is expected to be clean and available for use, can also be used to prepare ED*Facts* files and ensure timely, accurate and complete federal reports. An EDFacts planning calendar can be developed based on the ADE collections calendar to help with planning and documenting the EDFacts reporting process (see Resource #4, *WI EDEN Due Dates 2011-2012*).

5. **Document and establish an approval process for non-SAIS collections**
    ADE should document all non-SAIS data collections in as much detail as it does for SAIS collections and publish this documentation on the website. There should also be a formal approval process for all non-SAIS collections, even one-time only surveys and data needed for grant evaluation. Documentation should include authorizing statute or requirement, list of all data elements and their metadata (definition, valid code set, unit of measurement, responsible organization, and so on), method of submission, due date, and any processes for correction and superintendent sign-off. Documentation and tracking of non-SAIS data collections should be as automated and standardized as the SAIS collections, and they should be easily and readily accessible by ADE staff and external stakeholders, particularly LEAs. This documentation can be used to identify redundancies and begin to coordinate and centralize ADE data collections. The elimination of redundant data collections could save ADE millions of dollars in technology, time and resources, and significantly reduce the burden on LEAs in both time and financial resources.

6. **Review and update ADE data standards and collection documentation**
    ADE should perform a regularly scheduled review of all metadata for SAIS and SLDS elements, in addition to conducting a sunset review of each data element at specified intervals. It is easy to implement a data collection with data elements specified to meet particular reporting requirements and then never change those elements or collections. However, state and federal reporting requirements do change over time, and a strong data governance program will institute a periodic review process to ensure that each element is up-to-date and still required. The data governance program will also institute a change management process that considers the addition, deletion or change of data elements and/or collection procedures to meet current reporting requirements. Documentation about meta data standards and data dictionary should be updated annually, with all changes clearly highlighted, and made easily accessible to LEAs and student information system vendors to ensure that they collect and submit the appropriate data to ADE in a timely fashion.

    The periodic review should include all aspects of the data standards, looking particularly at the definition of each element and the code sets. State and federal law, along with new grant and reporting requirements, often call for adding, deleting or adjusting the code values allowed for a given element. These adjustments may result in conflicting or unclear code set definitions and affect the quality of the data submitted by LEAs. Specifically, the review should ensure that applicable code values are mutually exclusive and exhaustive, that each element addresses only one concept, and that any metrics to be calculated are sufficiently and clearly defined to ensure that all districts calculate it the same way.

7. **Maintain high levels of district and other external stakeholder engagement through advisory committees**
    ADE should continue to engage external stakeholders – particularly LEA representatives – in an advisory function.

    ADE should create a policy advisory committee to work with the Data Governance Board and a technical advisory committee to work with the Data Stewards Committee. Membership on these advisory committees should be limited to three- to five-year staggered terms and should include representation from a diverse group of LEAs based on size, rural/urban status, demographics and geographical location. The committee chair should also serve a time-limited term. The mission of these committees is to provide feedback to ADE about data-related issues.

Each external advisory committee should have a charter that documents the committee mission, expectations for committee participation, and responsibilities outside of the committee. ADE should consider providing for alternate formats for advisory committee participation (for example, webinars, video conferencing, conference calls, and email communications) and limiting travel to Phoenix to two or three times per year.

LEA engagement in subcommittees associated with specific IT and data-related projects (e.g., data dashboards, research and analytical tools) should be considered. In particular, LEA staff with a background in research and analysis, as opposed to technology, should be engaged. Development of new performance indicators, longitudinal statistics, and ad hoc queries must involve skilled researchers and analysts with appropriate training or experience in measurement, statistics, and research/analytical design. Some districts in the state have larger research divisions than ADE does, and the development of dashboards and other reports would benefit greatly from engaging district-level researchers.

8. **Establish a strong enterprise-wide data culture at ADE**
   In addition to creating permanent standing data governance committees and a robust set of governance processes and procedures, ADE needs to establish a strong data culture for all employees, not just those who serve on the committees. A strong data culture is established and maintained when everyone, top to bottom on the organization chart, understands and embraces that ADE is committed to a centralized, coordinated process that ensures the collect, availability, integrity, security and usage of high quality, timely and complete data at all times.

   A strong data culture could include a clear, concise data governance manual that is updated annually and shared in all new employee packets, consistent and pervasive communication about the expectation of and accountability for high quality data, clearly defined roles and responsibilities for all staff with regards to data, committee charters that articulate committee goals, objectives, deliverables and expectations for participation and requirement that all committee members sign the charters. A sense of accountability and an understanding of the consequences of not supporting the assurance of timely high quality data must be consistently communicated by senior leadership, division and business unit directors and data stewards. The focus should be on an enterprise-wide data culture and a coordinated, centralized data system that is fiscally and operationally efficient and cost effective.

9. **Hire a skilled trainer to develop data-related training for internal and external stakeholders**
   Effective communication about data systems – submission rules and processes, appropriate use, data sharing and access policies, and so on – is vital to ensuring high quality and valid data. If data entry clerks do not understand the importance of following specified formats or code sets, or business analysts do not understand the impact of using the correct variables in particular algorithms, or a programmer does not understand the application of privacy and confidentiality rules, then staffing decisions may be inaccurate, district funding may be impacted and confidence in ADE may be compromised. All documentation and communication about data and data systems must be clear and accurate to the reader, regardless of their role in the school, district or state.

   Oftentimes the documentation around data systems (e.g., data standards, directions for submitting and correcting data, frequently asked questions documents) are written by technical staff and produced in a format that meets standard IT documentation best practices. This may be fine for internal documents that are used by IT staff. Documents and materials that are to be used by non-IT

people (e.g., data coordinators, assessment directors, superintendents, researchers) need to be written, produced, and disseminated in any way that is easily understood, accessible and used. Some SEAs have incorporated the use of skilled trainers to develop online tutorials, documents, and other training materials that is more engaging and easily understood by users. ADE may consider engaging skilled trainers or a company that specializes in effectively communicating complex IT material to ensure that engaging, accurate, easily accessible materials are made available.

10. **Establish a formal process for responding to data and information requests**
Data requests come from all stakeholders both internally and externally and might require anything from a quick summary of a few pieces of information, a complex set of statistical analyses, or the building of a dataset for a researcher. ADE needs to establish a process for receiving, tracking and responding to all data requests, and it needs to make that process clear to internal and external stakeholders. Key aspects of a data review process include, but are not limited to:
    o Which unit will receive and triage the requests? Ideally, there is a central location and/or a single point of contact.
    o Will ADE charge for the time and/or resources needed to respond
    o Who decides who answers what questions (e.g., business unit, R&E, IT)?
    o What is the process for reviewing, validating and signing off on response?
    o What is the process for responding to information needs of Superintendent, Governor, legislative body and/or government relations body versus external researcher, news organization or advocacy group?
    o What tools are developed to track and monitor requests (e.g., approval or denial, unit asked to run analyses, what was included in analyses, validation and sign-off authority)

Recommended Resources

1. DataSmith Solutions, *10 Elements of Data Governance of Statewide Longitudinal Data Systems,*

2. Kansas State Department of Education, *Data Governance Program*

3. *Tennessee Department of Education, Role Descriptions and Responsibilities*

4. *Wisconsin Department of Education, EDEN Due Dates 2011-2012*